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# SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE • JANUARY 8, 1944

## Pacific Task Force

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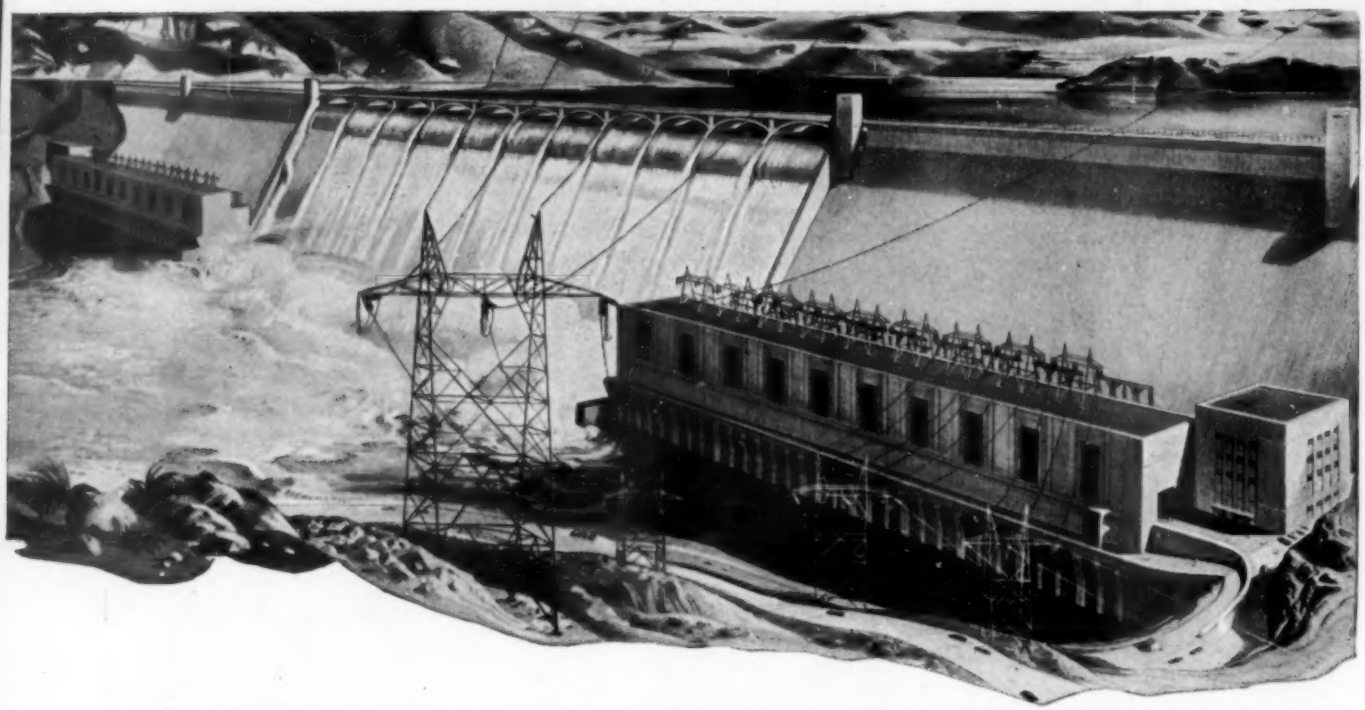

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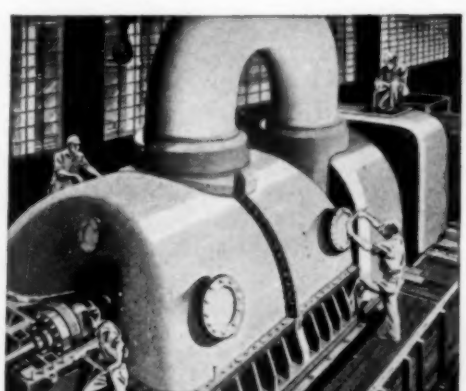

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MEDICINE

# Live To Be 125

## Serum made from the bone marrow of cadavers is believed by Russian scientist to be possible weapon against old age, cancer and high blood pressure.

➤ FIRST-HAND reports of a Soviet scientist's efforts to develop a weapon against cancer, high blood pressure and premature old age by a special kind of serum which has proved useful in stimulating wound healing are brought to American medical scientists in *American Review of Soviet Medicine*. (December)

The serum, called anti-reticular cytotoxic serum, ACS for short, was developed by Prof. Alexander A. Bogomolets, director of the Institute of Experimental Biology and Pathology which has been moved from Kiev to Ufa for the duration of the war.

It is made by inoculating horses with the cells of the spleen and bone marrow taken from a human cadaver. Cadavers of persons who died a sudden death and had no infectious disease are most suitable. Details of preparing and testing the serum are given in the same issue of the medical journal by P. D. Marchuk of Prof. Bogomolets' staff.

Unlike anti-diphtheritic serum and other serums developed against specific diseases, ACS does not act as a weapon against specific disease germs or their poisons. Instead, Prof. Bogomolets explains, it acts to stimulate the reactivity of the connective tissue in the body.

This connective tissue, as the name implies, binds together and supports various structures of the body. The layman recognizes connective tissue in the bones and cartilage, but it is found in many other structures. According to the modern view, this connective tissue is not merely a kind of skeleton or framework for the body structures but has other functions as well.

Prof. Bogomolets takes the view that the physiologic system of the connective tissue is the arena in which disease processes develop. Keeping this system on a sufficiently high level of activity he therefore considers one of the most important problems in treating disease. That is what his serum is designed to do and that is why he believes it can be a weapon against such diverse conditions as scarlet fever, childbed fever and other infections; cancer; high blood pressure; the mental disease schizophrenia; and the deteriorations of premature old age.

Forestalling premature old age has been the chief aim of Prof. Bogomolets' scientific investigations, according to a biographical note by Miss Dorothy A. Halpern, managing editor of the *American Review of Soviet Medicine*.

The usual life span of man, he believes, should be 125 to 150 years, since the life span of an animal is five to six times longer than its period of maturation. His serum was developed to stimulate the physiologic system on which, he believes, rests man's ability to resist infection and other disease processes like cancer which shorten the life span.

The war has curtailed his experiments on longevity and all activities of his Institute are now directed toward producing enough of the serum to meet the needs of the battlefront, where Soviet physicians and surgeons have found it useful in stimulating wound healing and the union of fractured bones.

It would be desirable, Dr. Henry E. Sigerist, editor of the *American Review of Soviet Medicine*, states in a note on Prof. Bogomolets' report, to have experiments with the serum carried out in this country. Any institution interested in the matter can obtain additional scientific reports from the medical journal's editorial offices.

*Science News Letter, January 8, 1944*

MEDICINE

## Sulfa Drugs for Colds Are Disappointing

➤ LATEST REPORT on the much-discussed question of whether sulfa drugs should be given for the common cold is again disappointingly negative.

This time Dr. Russell L. Cecil, Maj. Norman Plummer, M.C., A.U.S., and Dr. Wilson G. Smillie report (*Journal*,

***SOLUTION—Dynamite is the new answer to the problem of how to remove a drill broken off in a crankshaft. In this method, devised by Nels Sorenson, right, of the Ohio Crankshaft Co., a small amount—less than a thimbleful—of dynamite is pushed into the hole and set off with a fuse. The pressure of the blast is said to follow the drill flutes to the bottom of the hole, there reversing itself to drive the drill free. A plank laid over the hole stops the drill as it flies out.***

*American Medical Association,* Jan. 1) their results of a careful study at New York Hospital and Cornell Medical College of 72 colds in 66 different persons. Small doses of sulfadiazine were given by mouth daily for four days to 48 of these cold victims, while 24 served as controls.

The treatment did not shorten or alter the course of uncomplicated colds, they report. No striking benefits were seen in the complicated colds. The number of germs, other than the cold virus itself, at the back of the nose above the soft palate decreased uniformly under the treatment and the growth of disease-causing germs, such as pneumococci and hemolytic streptococci, was checked. The cold virus itself is known not to be affected by sulfa drugs.

The physicians therefore are opposed to routine use of sulfa drugs for the common cold but favor their use in a few selected cases as protection against severe secondary infection or complications. Giving sulfadiazine by mouth is simpler and more dependable, they found, than trying to apply a sulfa drug directly to the nose and throat.

*Science News Letter, January 8, 1944*

MEDICINE

# Leukemia Conquest Hope

**Resistance to this fatal malignant disease is apparently related to the endocrine glands, studies with animals reveal.**

➤A NEW LEAD in the search for a way to conquer leukemia, fatal malignant disease characterized by increased number of white cells in the blood, appears in a report by Dr. James B. Murphy and Dr. Ernest Sturm, of the Rockefeller Institute for Medical Research. (*Science,* Dec. 24, 1943)

Resistance to leukemia, their studies show, is apparently related to the glands of internal secretion. These glands include the pituitary, thyroid, thymus, adrenals and sex glands. Exactly which of these glands are involved and how the scientists do not yet know, but their evidence implicates both the thymus and adrenal glands.

The studies so far have been made with rats. Removal of the adrenal glands greatly reduced the resistance of these animals to a highly malignant form of transplantable lymphatic leukemia. Less than half, 46.9%, of a group of these animals from a strain very receptive to this transplantable leukemia developed the disease upon inoculation, but almost all, 90.3%, of a group of animals of the same receptive strain developed it when inoculated after their adrenal glands had been removed.

The disease in these animals is characterized by extensive invasion of the thymus gland, which other scientists have found is greatly stimulated by loss of the adrenal glands. Lack of these glands and their hormones apparently upsets the normal balance between the various endocrine glands in such a way as to make the animals more susceptible to this form of leukemia.

Further work along this line, it is hoped, will show what specific glandular imbalance may be responsible for lack of resistance to leukemia. If this can be learned, and if the rat findings apply also to man, it may be possible to find a way of stimulating leukemia resistance so as to prevent or cure the disease. The work is still a long way from that hoped-for, life-saving stage, but is believed to be at least a step in that direction.

*Science News Letter, January 8, 1944*

PUBLIC HEALTH

## Insect Disease Carriers Critical Health Problem

➤ THE PROBLEM of introduction of insect carriers of disease is one of the most critical now facing health authorities of the U. S., Brig. Gen. James S. Simmons, director of the preventive medicine division, Office of the Surgeon General, U. S. Army, declared at the American Public Health Association meeting in New York City.

Malaria, the diarrheas and dysenteries, and venereal disease are the three big disease problems of the Army, he found on an extensive tour of theaters of operations.

Typhus fever, which a few years ago would have been the fourth big plague threatening the Army's health and would have been put first 50 years ago, is not now giving any worry at all. The new anti-louse powder the soldier shakes into his clothing, methyl bromide to delouse clothing he has been wearing, and the Cox anti-typhus vaccine are the three weapons which have protected the American Army from this former war plague.

On the controversial question of atabrine versus quinine for malaria, Gen. Simmons said in his opinion atabrine is as good as quinine and is "thankful to God" we have developed atabrine production in this country so we can supply ourselves and the world. Critical research studies, moreover, have established that it can be safely given to flying personnel.

*Science News Letter, January 8, 1944*

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GENETICS

# New Food Yeast Strain

**Treatment with camphor vapor produces from Torulopsis utilis a new strain with cells bigger and with double content of edible protein.**

➤ A NEW STRAIN of yeast, with cells double the size of its parent species, has been originated at the British government's Chemical Research Laboratory at Teddington. The increased cell volume seems to be hereditary and permanent, for it has remained constant through the many cell generations through which the new strain has now been propagated, Dr. A. C. Thaysen and Muriel Morris state in a joint report. (*Nature*, Nov. 6, 1943)

Dr. Thaysen and Miss Morris were working on a species of "wild" yeast, known technically as *Torulopsis utilis*, which appears to have definite promise as a quick-producing source of edible protein when raised in great mass cultures in vats. They wanted a strain with bigger cells, just as a potato breeder might want a strain with bigger tubers.

First they tried a solution of colchicine, which has had astonishing effects in producing giants among larger plants. Colchicine failed to work, as did also another heredity-changing chemical, alpha naphthylamine.

However, the experimenters recalled the statement of another researcher, who claimed that camphor vapor caused changes in cell size in ordinary yeast. They tried this on their Torulopsis cultures, and presently were able to isolate a strain with cells slightly longer and decidedly thicker than those of the parent stock, with a net content a little more than twice as great.

Analyses showed that the chemical constitution of the new strain was not substantially different in most respects. It did, however, show considerably higher phosphorous content. Also, what may be of considerable practical significance later, the individual cells grow to full size and are ready to divide in considerably shorter time, despite their double size.

*Science News Letter, January 8, 1944*

GENERAL SCIENCE

# Science in Leningrad

**Despite incessant bombing and the vicious attacks of two winters, report indicates that the scientific institutions remain in good order.**

➤ DESPITE the incessant bombing that the Luftwaffe gave Leningrad, and the vicious attacks of two winters during which it was besieged, the scientific institutions and buildings of that city remain in relatively good shape. Soviet scientists are preparing, as the enemy is driven back, to resume normal scientific life.

The conditions in Leningrad were surveyed by Academician Leon Orbeli, vice-president of the Academy of Sciences of the U.S.S.R. and director of the Pavlov Physiological Institute, in a report prepared by the Soviet Scientists' Anti-Fascist Committee.

The main buildings of the Leningrad Academy remain in good shape, largely due to the work and care of the scientists who remained there during the war. The old academy buildings and the ethnological museum that formerly housed Peter the First's collection of curiosities are still standing.

Only the botanical gardens suffered heavily. A direct hit demolished the conservatory, destroying rare palms of great value and other tropical plants. It is difficult, Academician Orbeli reported, to estimate the damage done to the country's scientific findings in the field of botany. The herbarium and world collection of seeds, however, are safe, having been removed to a bomb-proof shelter in good time. The employees of the botanical gardens have begun to restore the gardens and are now growing new seedlings.

Work on plants for camouflaged airdromes, cultivation of various medicinal herbs and consultations with truck gardeners are among the war projects of the Botanical Institute, named in honor of Academician V. Komarov.

In the autumn of 1941 a bomb struck a building of the Pavlov Physiological Institute, but scientists were able to continue their work, as every dog used for experimental purposes was saved. Even during the most difficult months of the siege and blockade, Leningrad authorities supplied these animals with sufficient food.

Ivan Pavlov's closest colleague, Prof. Maria Fetrova, who remained in Leningrad, is conducting experiments on these dogs to determine the influence of bombings and shellings on higher nervous activity.

The Koltushi Experimental Station, in which Pavlov spent so much time during the last years of his life, remains the same and continues its scientific work.

Looking toward the day when normal scientific life can be resumed in Leningrad, the scientists are beginning to take necessary steps to repair the buildings of the Leningrad Academy and scientific institutions.

*Science News Letter, January 8, 1944*

BOTANY

## Dropping of Cotton Buds Caused by Dim Light

➤ SUSPICIONS that the money-losing premature dropping of flower buds and immature bolls by cotton plants is caused

***COLD WORK — This winter scene shows a U. S. Bureau of Mines exploratory crew working on the snow-clad slopes of Mt. Pleasant, Utah.***

by dim light in very cloudy weather is supported by experimental evidence at the Texas Agricultural Experiment Station as reported by Dr. A. A. Dunlap. (*Science*, Dec. 24, 1943)

Dr. Dunlap grew cotton plants in greenhouses where the light intensity could be closely controlled, and also placed black cloth covers over field-grown plants. Light intensities were cut down to a twelfth, and even nearly to a fortieth, of normal Texas cotton-field sunshine. The plants lost, on an average, three-fourths of their buds and green bolls, or squares.

*Science News Letter, January 8, 1944*

ORNITHOLOGY

## Giant Firecrackers Aid In Taking Bird Census

➤ WITH a ten-cent aerial bomb firecracker as a stimulant, male pheasants in a given five-mile area crow "present" to the census taker in a novel method of determining pheasant populations in game areas. H. Elliott McClure of the Nebraska Game, Forestation and Parks Commission describes this newly developed procedure. (*Journal of Wildlife Management*, January)

During a recent study on the calling of pheasants, Mr. McClure explains, it was noted that these birds responded by crowing following thunder, blasting, or shotgun explosions. Even such noises as the slamming of a car door or banging on a metal tub would stimulate them to crow. This peculiar response is the basis of Nebraska's pheasant-counting technique.

In taking the census, the census taker drives through the specific area from dawn until an hour after sunrise, the hours found to be best for pheasant response. At five-mile intervals, bombs are dropped and the responses counted.

One important weather restriction must be observed. Wind can spoil this method by carrying the sound of the bomb away or by preventing the distant calls of the pheasants from reaching the observer. The simple rule to be followed, therefore, is not to attempt to stimulate the birds by these bombs when there is a wind strong enough to blow out the match used to light the fuse.

"This method," Mr. McClure declares, "shows promise as compared with other methods of pheasant censusing, and when restrictions on the use of fireworks have been lifted, should be worth attempting in various states where the pheasant is important as a game bird."

*Science News Letter, January 8, 1944*

PHYSIOLOGY

# "Resuscitators" Dangerous

**Warning issued by Yale University physiologist that new devices, like old "pulmotors," impede natural breathing and may be fatal.**

➤ WARNING that thousands of lives are in danger because physicians are being misled into promoting the use of "resuscitators" for victims of carbon monoxide or other asphyxia is issued by Prof. Yandell Henderson, of Yale University. (*Science*, Dec. 24, 1943)

One of these devices, which Prof. Henderson had tested and given an adverse report on to the American Medical Association has been "accepted" instead of disapproved by that association, Prof. Henderson states. In this respect, he says, the medical association is in direct antagonism to the American Red Cross.

His objections to "resuscitators," which he says represent only a slight change from the old "pulmotors," are that the rhythm of the "resuscitators" does not correspond to that of the patient's natural breathing but opposes and impedes it, and that in severe cases of asphyxia if the pull and suck part of the apparatus is turned off and the inhalational part turned on the victim's death warrant is signed because the mask and valves are such that much of the carbon monoxide coming out of the lungs is re-inhaled instead of being eliminated.

An inhalator for reviving asphyxiated patients has been invented by Prof. Henderson and his associate, Prof. Howard W. Haggard. This device has never been patented, nor its manufacture, sale or use limited in any way. It provides a method of resuscitation by inhalation of oxygen with enough carbon dioxide to induce a maximum minute-volume of respiration.

*Science News Letter, January 8, 1944*

## Navy Uses Prone-Pressure

➤ THE NAVY'S Bureau of Medicine and Surgery, it was learned, has adopted the policy, in accordance with recommendations of the National Research Council, of emphasizing the Schafer prone-pressure manual method of artificial respiration to resuscitate victims of drowning, carbon monoxide asphyxia and the like.

The Bureau's policy is that no mechanical resuscitator should completely replace training of Navy personnel in the manual method of artificial respiration. Otherwise, it is felt, there might be a tendency to neglect training in the manual method and lives would be lost if personnel did not know this method at times when the mechanical resuscitators were not available because of destruction by bombing, for example.

The Bureau's policy statement also points out that with some types of mechanical resuscitators there is danger of injury to the lung tissue. The Bureau favors non-automatic inhalators to be used after breathing has been started by the manual method of artificial respiration. It favors the use of mechanical automatic resuscitators only if used by medical personnel in certain complicated cases such as patients with abdominal wounds for whom the prone pressure method might not be suitable.

*Science News Letter, January 8, 1944*

MEDICINE

## Special Operation For "Jeep Disease"

➤ A METHOD of operating for "jeep disease" which cuts the time the average soldier-patient must stay in the hospital from 68.4 to 22.6 days is reported by Maj. Paul N. Mutschmann and Lieut. George A. Mitchell, M.C., A.U.S. (*Journal, American Medical Association*, Jan. 1)

"Jeep disease" is the name given by another surgeon to pilonidal disease. This condition of cysts and sinuses at the base of the spine is greatly aggravated by vigorous military training and conditions of mechanized warfare.

The operation described by Maj. Mutschmann and Lieut. Mitchell is not a new one but a modification by which the operative wound is only partly closed instead of being sewed up tightly. With this method, they report, the soldier patient can be up and about on the sixth to ninth day after operation and back on duty in about 22 days. Compared with a previous method of operating, this method saved 2,392 days of hospitalization for 52 patients.

*Science News Letter, January 8, 1944*

PUBLIC HEALTH

# Europe's Typhus Different

**American variety is spread by rat fleas, that of Old World by louse. Is a real war plague which can change the course of history.**

➤ THE TYPHUS FEVER that has broken out in Naples differs from the typhus fever we have in the United States, and both are quite different from typhoid fever which recently hit a town in Kentucky.

European typhus fever is spread by the body louse. It usually kills more victims than the American variety, especially when it develops into epidemic form. The deaths from European typhus may run from 20 to 40 out of every 100 patients, while the American variety kills only two out of 100. Crowded housing conditions and lack of soap and water for bathing and laundering favor the spread of European or epidemic typhus.

Typhus is a real war plague and has been credited with changing the course of history more than once. Most notable recent example was when typhus in Serbia held up German-Austrian invasion of that country for six months in World War I, at the most critical period of the war.

The American variety of typhus fever is spread by rat fleas. Headache, chills, fever and general pains are symptoms of either variety of typhus fever, plus a skin rash of red spots which has given the disease the name spotted fever in some parts of the world. It has also been known as jail fever and ship fever. Russian peasants call it winter fever.

Preventing American typhus fever means getting rid of rats and avoiding flea bites. Preventing the much more dangerous European variety rests on delousing or anti-louse procedures.

A vaccine, believed to give protection against either kind of typhus fever, has been developed and has been given to American troops for their protection in regions where louse-borne typhus prevails. The Army also has a dusting powder which repels lice, as well as other methods of delousing a soldier's clothes and equipment.

Typhoid fever is caused by an entirely different germ which attacks the intestinal tract and gets into the body in contaminated food, milk or water. This disease also was once a war plague. There is now an efficient vaccine against typhoid fever which is used to protect American troops, and most other modern armies protect their men from typhoid by vaccination. Civilians in general in this country do not need the vaccine because good sanitation and public health control of healthy carriers of the disease keep food, water and milk from becoming contaminated with the germs. The recent outbreak in a Kentucky town was reported due to two old wells in which the water had become contaminated.

*Science News Letter, January 8, 1944*

AERONAUTICS

## Huge Altitude Wind Tunnel Soon To Be Ready

➤ A HUGE altitude wind tunnel for research on aircraft engines, the first of its kind, now being built at the Cleveland Airport by the National Advisory Committee for Aeronautics, will see completion the early part of next year.

This tunnel, which is part of the $20,000,000 Aircraft Engine Research Laboratory, largest in the world, will be the first to combine all conditions approaching those of the stratosphere. It will be used to improve the high altitude performance of aircraft engines and engine installations for Army and Navy planes.

Giant-bladed fans will create a 500-mile-an-hour wind in the tunnel. Air temperatures in the wind tunnel as low as 67 degrees below zero Fahrenheit, simulating stratosphere conditions at 50,000 feet, will be maintained by the huge refrigeration plant, which will have a capacity twice as large as that of the biggest refrigeration plant in the world.

Designed to test engines with a maximum of 3,000 horsepower, it is expected that the tunnel will prove adequate to test engines up to 4,000 horsepower.

*Science News Letter, January 8, 1944*

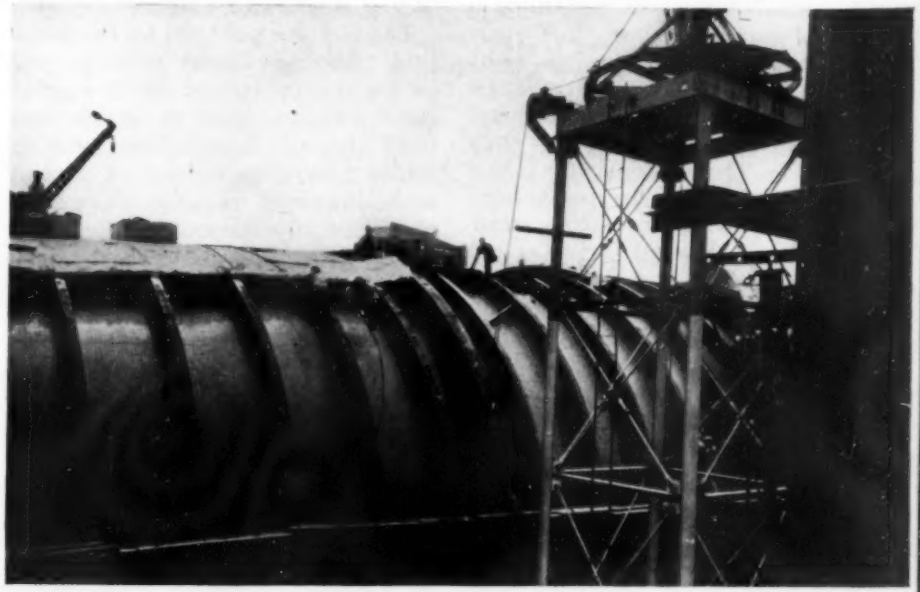
ARCHAEOLOGY

## Owners of Iraq Treasures Asked to Contact Yale

➤ OWNERS of inscribed clay tablets, seal cylinders and any other archaeological treasures from the kingdom of Mesopotamia, now Iraq, are requested to communicate with Albrecht Goetze, Babylonian Collection, Yale University Library, New Haven, Conn., states a report to the American Schools of Oriental Research.

These clues to the political and cultural history of the ancient Orient are now scattered all over the country in libraries, museums and private collections.

*Science News Letter, January 8, 1944*



***FIRST OF ITS KIND—This is the NACA's new and unique altitude wind tunnel under construction at the Cleveland Airport. The tunnel is insulated by fiber glass.***

ENGINEERING

## Jeep Gear Shift System Is Quickly Mastered

➤ AUTHORS of women-driver stories may want to modify this prediction, but nevertheless the jeep's eight-speed gear shift system can be mastered in two minutes by all post-war motorists, Dean A. Walters, director of service for Willys-Overland Motors, declares.

The jeep has three levers which control its unique gear-shift system, Mr. Walters pointed out. One is exactly the same as that in our regular passenger automobiles. The second controls the flow of power to the front wheels. The third lever controls the "super-low" ratio, similar to that of a tractor.

When pulling at full strength with the first lever in low, the second directing power to all four wheels, and the third in its super-low ratio, the little jeep can tow almost a ton in weight on dry pavement, scientific tests conducted by the U. S. Department of Agriculture recently proved.

*Science News Letter, January 8, 1944*

ENTOMOLOGY

## Nicotine Bombs Slated For Warfare on Aphids

➤ BOMBS will go off in American greenhouses after the war.

But they won't shatter any glass; they'll kill only aphids—plant lice.

Research by U. S. Department of Agriculture entomologists has demonstrated that the aerosol method, used now against malaria mosquitoes on many American fighting fronts, is effective also in attacks on insect pests that damage plants growing in greenhouses and other closed spaces. The only difference is that whereas pyrethrum is the poison used in the mosquito-killing bombs, the standard munition in chemical warfare against aphids is nicotine.

The "bombs" used are small, grenade-shaped containers loaded with the insecticides dissolved in Freon, compound first brought out for the cooling coils of electric refrigerators. It is a gas at ordinary temperatures, but becomes a liquid under slight pressure. The bombs do not actually burst, but the sudden release of the internal pressure when they are opened sends the poison-loaded Freon vapor out into all corners of the room or tent that is being purged of its pests. Harmless to humans, the vapor is deadly to insects.

The tests showed that a given quantity of nicotine released as an aerosol from a Freon bomb will kill the insects in twice as many cubic feet of greenhouse space as when burned for fumigation in the method now used, besides eliminating the fire hazard involved at present.

It is not expected that the new method will come into general use until after the war because of present difficulty in obtaining necessary materials. All Freon bombs that can now be produced are needed for the protection of troops and the "de-mosquitoing" of airplanes in malaria-infested regions.

*Science News Letter, January 8, 1944*

MEDICINE

## Movie of Heart Disease Medical Teaching Aid

➤ A COMFORTABLE looking woman, considerably past middle age, wearing a pretty blue and white print dress, smiled pleasantly at the camera, then made 21 trips over a two-step staircase in about a minute and a half. At the end of the twenty-first trip she had to stop, face drawn with pain and fear, left hand and arm clutched tightly against her breast and held there by the other hand, as a suffocating paroxysm of pain gripped her.

This "textbook" picture she gave of angina pectoris, much-dreaded form of heart disease, is part of the opening sequence of a new medical teaching film in sound and color, which was shown to the public for the first time at a meeting of the Boston Scientific Film Society at Harvard College.

The film was produced by Dr. Joseph E. F. Riseman, Boston physician who teaches at both Harvard and Tufts Medical Schools and is on the staff of Beth Israel Hospital, Boston. The film is intended to serve as a clinic for teaching medical students and for giving busy physicians a chance to keep up to date on the latest knowledge about angina pectoris.

The stair-climbing of the opening sequence is no stunt but a method for studying objectively both the disease and the effects of various medicines, without having to rely on the patient's impressions of what brings on an attack, how long they last and how much or little better he feels after taking a particular medicine.

The balance of the film shows diagnostic signs, the physiology of the disease, the damage to the heart as seen in specimens after death, and methods of treatment.

*Science News Letter, January 8, 1944*

# IN SCIENCE

NUTRITION

## Raw Brain in Diet Helps Relieve Skin Diseases

➤ A HIGH protein diet plus raw brain or liver helps to relieve eczema, psoriasis, scleroderma, keratoses and other skin diseases, Dr. Francis M. Pottenger, Jr., of Monrovia, Calif., reported at the Cincinnati meeting of the American Therapeutic Society.

The beneficial effects, it is believed, are due to diet factors, possibly a new vitamin, found especially abundantly in such lecithin-rich meats as brain, liver, heart muscle and fat and in solvent-processed soybean lecithin. The material is destroyed by normal cooking and, in dairy products, by the heat of pasteurization.

"These factors," Dr. Pottenger stated, "have profound nutritional effects on the body as a whole, including skeletal form (the development of the regular face of the animal or child), maintenance of neurological tone, reproduction and the prevention of allergic manifestations, to mention but a few."

*Science News Letter, January 8, 1944*

PSYCHIATRY

## Post-War World Will Need Help in Selecting Leaders

➤ PSYCHIATRISTS were called on, at a meeting of the National Committee for Mental Hygiene in New York City, to help the post-war world by finding a method of selecting leaders that will prevent "ambitious moral morons and other unqualified individuals from acquiring positions of influence and power."

Society's need for such a method of selecting its leaders was stressed by Dr. Nolan D. C. Lewis, director of the New York State Psychiatric Institute and Hospital.

Abnormal fears, worry, boredom, indecision, sense of inferiority and oversensitivity that affect persons today are, Dr. Lewis declared, greater public enemies than gangsters and racketeers.

The coming generations, he believes, will suffer even more extensively from these public enemies than we do today unless efforts at improving mental health are increased and extended.

*Science News Letter, January 8, 1944*

# CE FIELDS

METEOROLOGY

## On Average, U. S. More Sunny Than Most of Europe

➤ CHANCES of our pilots in the Mediterranean region having clear flying weather are not as good as along our own Pacific coast, but much better than for many other regions of the United States.

A study of the sunshine and cloudiness in the Mediterranean basin for previous years by Dr. W. Gorczynski shows that on the average the United States is more sunny than western, central or northern Europe.

The zone in North Africa between 30 and 20 degrees north latitude was found to have the brightest, clearest skies, Dr. Gorczynski stated in a report to the American Meteorological Society. The Pacific coast came next, followed by the Mediterranean coast and islands.

Protection against cold and violent winter winds given by the surrounding mountains is largely responsible for the sunny and mild climate found on the Mediterranean coasts of Southern Europe.

*Science News Letter, January 8, 1944*

ENGINEERING

## Tenth of 1943 Electrical Energy Used in Electronics

➤ A TENTH of all electrical energy generated in the nation during 1943 passed through electronic devices making the industrial electronics age "an accomplishment of today," not a post-war promise, Dr. L. A. Umansky, industrial manager of General Electric's industrial engineering division, said.

Electronic rectifiers to satisfy demands for direct current in war-expanded electro-chemical and light metal industries take the lead. But demonstrations of the latest devices have revealed that industry has been given a versatile tool.

"Electronics has taken its place as an equal partner, side by side with other electrical apparatus," Dr. Umansky said, "enhancing rather than superseding them."

Warning against industrial use of electronics just because it is fashionable, he declared that "nothing but harm will accrue to engineering progress . . . if electronics is used without discrimination."

Electronics should improve the product, lower cost, or increase production. Use of electronics equipment is recommended, Dr. Umansky pointed out, for "the extension of our electrical senses" to amplify signals so weak that they would otherwise be lost, and to replace the human eye or touch with something much finer, faster and more reliable for a myriad of counting and inspection jobs.

Electronic equipment has the advantage of no moving parts. In converting alternating current to direct current by electronic rectifiers, less critical material is used than in comparable rotating equipment, and efficiency is higher.

*Science News Letter, January 8, 1944*

NUTRITION

## Dehydrated Pork's Loss Of Thiamin Preventable

➤ LOSS of precious thiamin, or vitamin $B_1$, from dehydrated pork during storage at the high temperatures of warehouses or docks can be prevented by adding to the dehydrated pork a cereal-milk-bone mixture, Dr. E. E. Rice, J. F. Beuk and Dr. H. E. Robinson, of the Swift and Company research laboratories, report. (*Science*)

A way to keep foods from being spoiled nutritionally, as they can now be kept from being spoiled through bacterial action and decay, may result.

The discovery was made in the course of studies of a food for pet animals. This pet food contained meat and meat by-products along with about 33% of a mixture of cereals, milk, tomato paste and bone meal. When cooked and dehydrated, this pet food kept most of its vitamin $B_1$ for several weeks at 120 degrees Fahrenheit, a temperature known to cause severe destruction of the vitamin in dehydrated meats or eggs.

Some foods, unlike meat and eggs, apparently do not lose thiamin when stored at high temperatures. The Chicago scientists reasoned that such foods in the cereal-bone-milk mixture were having a stabilizing influence on the thiamin in the meat, helping to prevent its destruction by the high storage temperature. Tests showed this to be the case.

The particular mixture they used is probably not specific for decreasing thiamin loss, they point out. It gives a starting point, however, for studying the nature of the loss and finding possible ways of minimizing it.

*Science News Letter, January 8, 1944*

SEISMOLOGY

## Sharp Earthquake Recorded From Lake Maracaibo

➤ A SHARP earthquake shock rumpled the shores and disturbed the waters of Lake Maracaibo in northwestern Venezuela on Tuesday, Dec. 21, at 9:46 a.m., EWT, according to instrumental records from five American seismological observatories transmitted through Science Service and interpreted by scientists of the U. S. Coast and Geodetic Survey.

The epicenter was located in the region of 11 degrees north latitude, 69.5 degrees west longitude, somewhat to the west of the lake. On the opposite side of this wide, shallow body of water is one of the most important groups of oil fields in South America. Whether the disturbance was near enough, or intense enough, to cause damage to the wells has not yet been determined. There are some oil fields to the west of the lake also, but they are of less importance than the eastern-shore fields.

Observatories reporting were those of Georgetown University, St. Louis University, Spring Hill College at Mobile, Ala., and of the U. S. Coast and Geodetic Survey at Tucson, Ariz., and San Juan, P. R.

*Science News Letter, January 8, 1944*

AERONAUTICS

## New Parachute Escape From Plane Invented

➤ A BETTER break for pilots of fast fighter planes, especially those of the pusher variety, is provided by the invention, granted patent No. 2,335,822, of H. L. Bowers of Kenmore, N. Y., assignor to the Bell Aircraft Corporation. Trying to make a conventional parachute escape from such a plane is almost as dangerous as "riding it down," for the flier stands a high chance of being struck and killed by either propeller or tail assembly.

In Mr. Bowers' invention, the plane's own rush through the air is made to supply power to lift the pilot out of the plane and literally catapult him (though not too violently) back over the tail. This is accomplished by suspending the seat from the top of the "greenhouse," which is hinged at its rear edge. The sloping front windshield is also hinged at its upper edge, so that when its lower edge is released by the pull of an emergency lever it catches the wind, flies up, admits the force of the wind to the whole under surface of the "greenhouse," and so tosses the pilot up, back and out.

*Science News Letter, January 8, 1944*

CHEMISTRY

# Paper Finds New Uses

**Can be treated by various methods to give it high wet-strength in order that it can be used to make such things as parachutes and mouth masks.**

By MARTHA G. MORROW

► PAPER has at last been developed that doesn't have to be brought in out of the rain. It can even be washed and used again. Now that a simple treatment keeps it from losing its strength and disintegrating when wet, paper is performing innumerable tasks undreamed of before the war.

Tents and even clothing may some day be made of paper. Crepe paper parachutes will deliver supplies to our soldiers. Even now it is successfully replacing cloth and burlap for bags and is giving the contents greater protection against the elements. Paper bags are actually pinch-hitting for steel drums.

Cartons that can withstand all kinds of weather are made of paper. Vegetables are wrapped in paper bags that stay strong even when dampened by the natural moisture of the vegetables. Flour and sugar, packed in bags of treated paper, remain unharmed when stored in damp places or when water seeps into the warehouse.

Most significant just now, when blueprints and maps by the thousands of tons are required in the war effort, is the longer life of treated paper when blueprints and maps are handled during manufacture or in actual use.

The wet-strength which can now be given paper is independent of any coating or sizing on the paper itself. It is an integral part of the paper. Some types of high wet-strength paper soak up water, others shed it. This depends entirely on the nature of the paper and on other treatments it may receive.

### Looks the Same

Paper which has been treated for wet-strength looks exactly like untreated paper of the same kind. Only by wetting them with water can anyone but an expert tell them apart. The absorbency of the paper is not materially affected by this treatment, while the strength of the wet paper is greatly raised. Tests show that wet paper can retain as much as 40% of its original dry strength.

Paper that would retain its strength when wet was brought into the market some years ago, but had several disadvantages. The early processes required so much treating material that the paper became brittle and non-absorbent. Today over a score of mills are producing high wet-strength paper, and several quite different processes are employed.

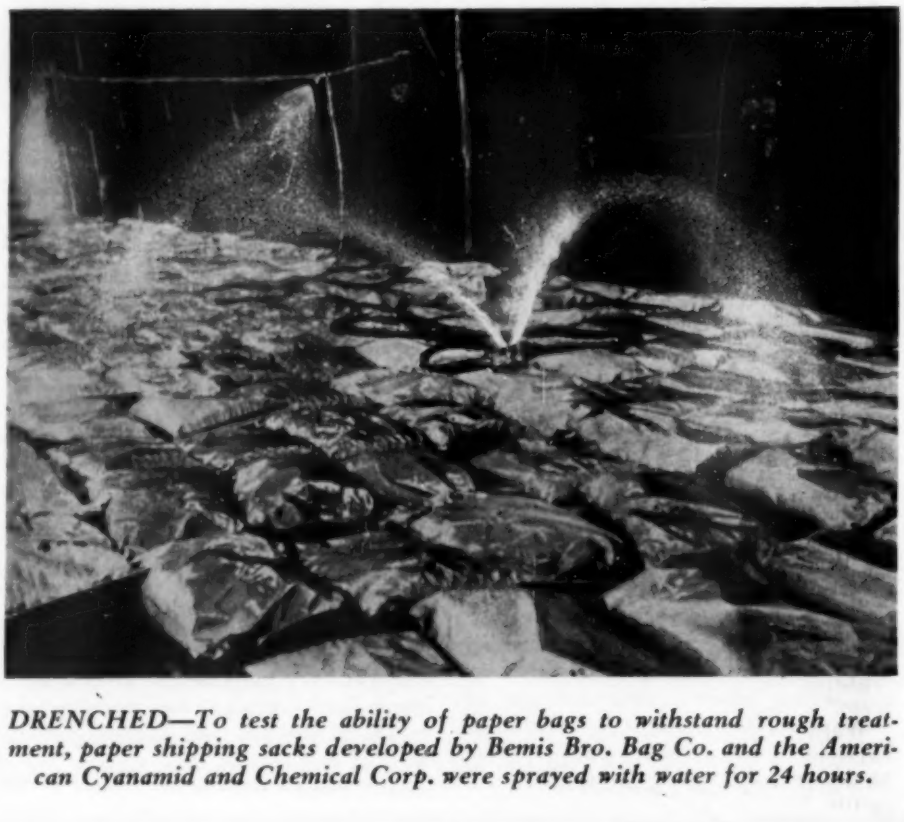
A new method of giving paper a high wet-strength consists of adding a small amount of a synthetic resin, melamine-formaldehyde, to the paper pulp in the beater just before the sheet is formed. The resin added to the paper pulp is absorbed by the paper fibers.

No change in usual machinery or operation is required to give wet-strength with the resin. The resin is merely added to the suspended pulp and the paper fibers are subsequently carried through a regular paper-making machine to convert them into a sheet.

When a small amount of the resin is added to paper pulp, in the course of its preparation in the regular paper mill, the resin particles cling tenaciously to the fibers. When the fibers are felted together into a sheet and passed through the heated drying rolls of the paper-making machine, the resin is cured and produces a strong water-proof bond to hold the fibers together.

The individual cellulose fibers in paper are interlocked and fastened by another method based on the use of urea-formaldehyde resin. This also gives an inherent wet-strength through the sheet. An earlier method of producing wet-strength paper was to use a viscose preparation. The cost, however, is much higher than that of other processes widely used today.

One wet-strength paper has been developed specifically for the armed services to replace lens tissue, which in the past has been made from raw material no longer available. The paper is soft and absorbent, and in many respects similar to our familiar handkerchief tissues. Yet instead of falling into a thousand pieces when saturated with water, it sticks together and can be hung up to dry just like a handkerchief and used again.



*DRENCHED—To test the ability of paper bags to withstand rough treatment, paper shipping sacks developed by Bemis Bro. Bag Co. and the American Cyanamid and Chemical Corp. were sprayed with water for 24 hours.*

*STRONG—Paper treated for wet-strength does not tear easily when soaked with water even if you pull on it very hard.*

Parachutes of paper have been developed so that supplies can be dropped to our fighting men whose lines of communication have been cut by enemy action. Replacing nylon, these chutes of creped kraft paper can carry as much as 100 pounds of food or equipment when dropped from an airplane flying as fast as 180 miles per hour. Rain will not damage them, and they can be used several times.

Mouth masks for use in a sickroom can now be made of paper. Cotton masks, which were heavy, hot affairs, are being replaced by light paper masks. The material used has a good wet-strength so that when the wearer moistens his lips he won't break it. When soiled, it can be boiled for sterilization and reused.

### Protects Against Dust

Masks of this type are used in industrial plants where powdery substances are produced or handled, to protect workers against inhaling toxic dust.

Soap tissues of wet-strength paper can be used once and thrown away. These individual wash cloths are saturated with soap, and the paper base gives the hands something to work on.

Paper bags can even be made to hold water. The old type of brown bag, even if it didn't leak the minute water was put into it, could never be used to carry the liquid any distance. Now its wet-strength twin can serve just such a purpose.

### Uniform Markings

In order that wet-strength paper may be easily distinguished from untreated paper, the government is specifying that uniform markings be used. All wet-strength paper used in the manufacture of single wall, duplex and multi-wall paper shipping sacks should be distinctly colored, stained, printed or marked with longitudinal stripes spaced not less than two inches or more than ten inches across the width of the paper. The stripes are required to be not less than one-eighth inch in width. No other grade of paper used in the manufacture of such shipping sacks may be so marked.

Paper containers offer interesting possibilities for transportation and open storage of chemicals. Where warehouse space is limited, for export shipments, and as containers for fine chemicals, paper sacks may solve difficult problems at an extremely low cost compared with rigid containers such as barrels and drums.

Various tests have been conducted to prove the ability of wet-strength paper to pinch-hit for other materials in bags. One such test was designed to simulate the worst abuses that might be encountered in shipping supplies overseas.

Bags of different materials were each filled with 50 pounds of crystalline trisodium phosphate. This is soluble in water and cakes readily when moist. A total of 836 bags of eight different types were tested.

These bags were handled more roughly and transported by trucks more often than would occur during regular factory operations. Sacks of each type were dropped several times from a height of six feet before they were submerged and sprayed with water. After the wetting, half of the bags were dropped from an elevater conveyor a number of times.

The bags were loaded into a freight car, shipped several hundred miles and dropped six or seven feet onto a square-edged timber which would have caused any ordinary bag to split wide open. Reloaded and shipped again, the filled bags were once more dropped onto a square-edged timber.

At the end of the test the bags were opened and the amount of lumped or spoiled material estimated. Bags of high wet-strength paper passed this difficult test with flying colors.

*You can obtain samples of these new kinds of paper, including the specially treated wet-strength paper and other sheets that look like it but are not treated, by sending 50 cents and asking for the THINGS OF SCIENCE unit on "Unusual Paper and Sheeting." The unit also gives you a mouth mask and soap tissue sheets, and tells you how to perform experiments with the paper for yourself. Address: THINGS, care of SCIENCE NEWS LETTER, 1719 N Street, N. W., Washington 6, D. C.*

*Science News Letter, January 8, 1944*

***LOADED — Parachutes of wet-strength paper to deliver food and supplies to our armed forces were developed by the U. S. Navy Department with the cooperation of Dennison Mfg. Co.***

## Do You Know?

*Jeeps,* with flanged steel wheels, are used as switch engines in Australia.

*Rattlesnakes* are peculiar to the New World, their distribution ranging from southern Canada to southern Brazil.

Hibernating *fish* always head into flowing water, and tend to keep the same relative position in the water all through the winter.

Scientists offer little hope of synthetic rotenone or pyrethrum, essential *insecticides,* because of their complicated molecular structure.

Synthetic rubber flexible *hose,* which resists oil and other deteriorating liquids and seals itself when hit by gunfire, is now used in warplanes.

Daily commercial *airplane* service, recently established between the United States and Alaska, puts Seattle and Fairbanks only 13 hours apart.

Marmink fur in ladies' coats is mink-dyed *muskrat* fur, marsh rabbit meat sold in markets is muskrat flesh; muskrats when dead thus seem to "lead a double life."

*Australia,* with a population of 7,000,000, is now feeding 12,000,000 persons; all servicemen of the United Nations in the southwest Pacific are fed by Australia and New Zealand.

The flightless *dodo* bird, of Mauritius island near Madagascar, became extinct before 1700 A.D., less than a century after its discovery, because three or four of the birds furnished a meal for a whole ship's crew.

*Insecticides* for farmers and Victory gardeners probably will be more plentiful next year than this because of increased supplies of rotenone from Latin America and the development of satisfactory substitutes grown in the U. S.

The inoculation of soil infested with grubs of *Japanese beetles* with "milky disease" will reduce the beetle population; the milk disease organism, it is found, builds up in the soil and spreads from treated to untreated areas by natural means.

MEDICINE

# Remedy for New Disease

**Toxoplasmosis, almost invariably fatal ill, similar to encephalitis or spotted fever, may be treated with sulfa drug which cured mice.**

➤ HOPE that toxoplasmosis, a new and almost invariably fatal disease, may be cured by sulfapyridine appears in a report by Dr. David Weinman and Dr. Robert Berne, of Harvard Schools of Medicine and Public Health. (*Journal, American Medical Association,* Jan. 1)

Sulfapyridine cured mice with this disease at the rate of 95 out of 100, although only 17 out of 100 animals survived without this treatment, the Harvard scientists report. Some animals were cured even when treatment was started as late as 13 days after they got the disease, and within three days of their expected death from it.

The results seem to warrant use of the sulfa drugs in human cases of acute toxoplasmosis, the physicians state.

Toxoplasmosis is a relatively new disease of humans. Before 1939 scientists generally rather doubted that it occurred in man, although a variety of animals had been attacked by the large, one-celled parasite, called Toxoplasma, which causes it.

Children attacked by it have convulsions, fever and disorientation and may be thought to be suffering from encephalitis, popularly termed "sleeping sickness." In adults the disease might be mistaken for Rocky Mountain spotted fever, endemic typhus fever or even atypical pneumonia. Rash, fever and lung involvement were the outstanding features in adult cases reported.

Some doctors believe the malady is rare while others think it may occur more often than is realized because it may be mistaken for other ailments. Heretofore there has been no specific cure for the condition in man, the patients usually dying within a few days after symptoms first appeared.

*Science News Letter, January 8, 1944*

BACTERIOLOGY

# Struggle in the Soil

➤ PENICILLIN and similar germ-killing compounds produced by soil-inhabiting molds and other lower plant forms aren't in business just for our health. They are first beneficiaries of their own poison-making proclivities, for the germicidal substances serve as chemical warfare weapons, to clear away other microscopic organisms in the upper layer of the soil, where competition for living space is intense.

A picture of this function of penicillin and its kin-chemicals was presented before the Torrey Botanical Club in New York City by Dr. Charles Thom, veteran researcher in molds and related lower plants, recently retired from the U. S. Department of Agriculture after many years of service.

In every teaspoonful of soil, Dr. Thom pointed out, there are "hundreds of millions of bacteria, millions of actinomycete elements, hundreds of thousands of mold elements, tens of thousands of protozoa and hundreds of nematodes and other wormlike animals. In such competitive environments, a soft-walled mold like *Penicillium notatum* needs protection comparable to a tank in human warfare if it is to maintain itself."

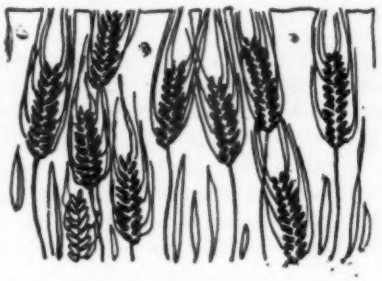
Germ-killing compounds have so far been isolated from three major groups of soil microorganisms: bacteria, molds and actinomycetes. The latter are a kind of "in-between" class of lower plants, that are neither exactly molds nor fungi, though they have some resemblances to both.

The discovery of the high medical value of penicillin has stimulated very active research on all kinds of soil microorganisms, in the hope of finding other compounds, possibly still more potent in the destruction of bacteria in the human body, with the apparently total absence of undesirable after-effects that has made penicillin almost an elixir of life when used in time against certain kinds of disease bacteria.

*Science News Letter, January 8, 1944*

GENETICS

## NATURE RAMBLINGS
*by Frank Thone*



**Soviet Wheat**

➤ A GIANT-GRAINED hybrid wheat, with individual kernels almost three times the weight of ordinary wheat grains, is one of the agricultural novelties which Soviet scientists are preparing to carry back into western Russia as soon as it has been cleared of Nazis. A cablegram received from Soviet Scientists' Anti-Fascist Committee in Moscow adds that the new grain variety is also highly resistant to practically all known fungus diseases of wheat.

The hybrid was originated by Academician Anton Zhebrak, member of the Belorussian Academy of Sciences and professor of genetics at the Timiriazev Academy. He was working on his breeding experiments in the White Russian city of Minsk when Hitler's invasion was launched, and carried his priceless propagation stock with him as he left the burning streets behind. Now he is ready to carry the descendants of those grains home from exile, for further tests in their ancestral soil.

Academician Zhebrak's hybrid is a cross between the standard hard or macaroni wheat known botanically as *Triticum durum* and a recently discovered wheat species from the Caucasian highlands, called *Triticum timopheevi*. He has patriotically given it the name Soviet wheat, or *Triticum sovieticum*.

It is from the timopheevi wheat that the new hybrid apparently derives its extreme resistance to fungus attacks. The same species has been introduced into breeding practice in the United States; of no economic value by itself, it is prized for the contributions it makes in hybrid combinations.

Academician Zhebrak has also produced a hybrid between the timopheevi species and common wheat (*Triticum vulgare*), which has progressed to the stage of large-scale field tests.

Both these hybrids are of the type which geneticists call amphiploid. This means that the full number of heredity-bearing chromosomes in the cells of both parents are added together in the offspring, instead of being halved and the half-numbers then added. This increased chromosome number often gives the resulting hybrids considerable advantages such as increased size and greater vigor.

The chromosome number for timopheevi wheat is 28, for durum wheat the number is also 28, and for common wheat it is 42. The timopheevi hybrid with common wheat thus has 70 chromosomes per cell, while the new Soviet wheat has 56.

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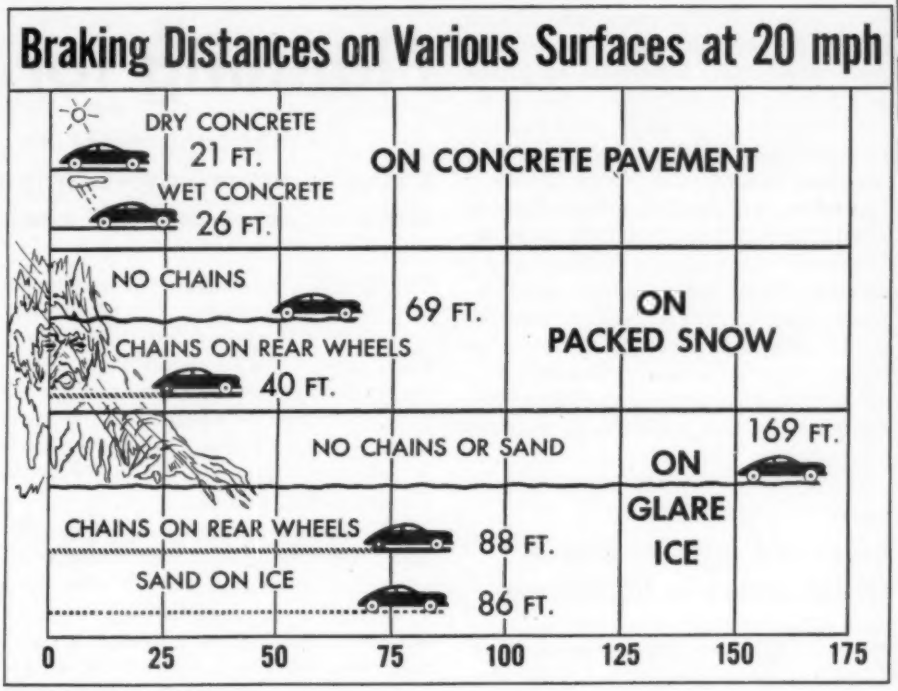


***SKIDDING—The National Safety Council has prepared this chart in the hope that it will make car drivers more careful on dangerous winter streets. Traffic deaths in snow belt states last winter increased the mileage death rate 24% above the summer toll. The chart does not include in its "braking distances" the actual stopping distances, which are 22 feet more at 20 m.p.h., because it takes the average driver ¾ of a second to react and apply brakes after seeing a reason to stop.***

SAFETY

## Transportation Troubles Cause Much Absenteeism

➤ TRANSPORTATION problems were responsible for as much as 31% of all absenteeism in some war plants during severe weather last winter.

Concern over the annual increase of auto accidents, always greatest in mid-winter, and the necessity of avoiding traffic tie-ups and loss of essential vehicles or manpower, was expressed in a joint statement by Under Secretary of

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War Robert P. Patterson and Lieut. Robert E. Raleigh, safety director of the International Association of Chiefs of Police.

The wartime tips they give for minimizing winter skid-wrecks and road blockades, based on National Safety Council research, include reducing speeds when snow and ice conditions require it, always maintaining visibility, using anti-skid chains when streets are dangerous, keeping a safe distance from the vehicle ahead, signaling intentions as clearly as possible and anticipating the mistakes of pedestrians and drivers. Mechanics are scarce and vehicles must be made to last.

*Science News Letter, January 8, 1944*

SAFETY

## Industrial Injuries Cause Great Losses in Manpower

➤ LOSSES in manpower because of industrial injuries are higher now than they have been for many years, Max D. Kossoris, chief of the Industrial Hazards Division of the Bureau of Labor Statistics, stated at the National Safety Congress in Chicago.

"Considering the trends during the last two years, the further drafting of men out of our industries, and the expected growth in our industrial employment, the trend of injuries can be expected to continue upwards," Mr. Kossoris predicted.

During the last few years, total work injuries have increased more rapidly than employment. Mr. Kossoris said that from 1940 to 1942 average employment increased by 19%, but work injuries rose 23%.

The combination of "green" personnel, congestion and less adequate supervision increases the problem which safety engineers must handle.

*Science News Letter, January 8, 1944*

*Camels* have been used in warfare from the earliest days in history.

PSYCHOLOGY

# Planning for the Future

**Americans want to arrange now for preventing post-war unemployment; in favor of giving returning soldiers education and first choice of jobs.**

➤ THE AMERICAN people want plans made for re-converting for peace after the war, and they want those plans made now. This is revealed by a poll covering all major regions of the nation, conducted by Dr. Jerome S. Bruner, of the Office of Public Opinion Research at Princeton University, for the National Planning Association.

"The public is ahead of the government and Congress in their demand for immediate planning," Dr. Bruner said.

Almost unanimous backing is given President Roosevelt's proposal to give returning soldiers a chance for education. Only 11% oppose the plan while 86 out of every hundred favor it—Republicans and Democrats. Also popular (81% in favor) is the idea of lending money to returning soldiers to help them get started in business or to establish a home. And men and women, rich and poor, would give the soldiers first chance at jobs after the war. But any plan to provide a cash bonus to the soldier after he has found a steady job is likely to meet considerable opposition, the survey reveals.

Apparently a good job is seen by most people as the first essential to be provided the returning soldier. The largest vote of those surveyed (41%) was for having this handled by the U. S. Employment Service, but another large group favor having the job assigned to a new government agency. Only 14% would have the local draft boards handle it.

What sort of a world will we have after the war? Most people (56%) look for a large number of new products to make living more pleasant. But, on the other hand, the survey does not indicate that we may expect any wild spending spree when peace comes. More than seven out of every ten of the persons surveyed declared they are going to hang on to their bonds for a while after the war. Less than half are looking forward to some purchase when the war is over, and most of these hope to put the money into a house or house repairs.

Nine people out of ten favor the continuance of rationing after the war if it is necessary to feed starving and devastated countries, and 75% advocate post-war price control for a while.

One point on which people disagree is who should lead in the post-war planning. In general, the less well off economically and the Democrats feel that it should be done by the government; the more wealthy and the Republicans would have business and labor take the initiative. All political parties and income groups are equally optimistic in the belief that joint planning can prevent unemployment after this war.

*Science News Letter, January 8, 1944*

NAVAL SCIENCE

## New Carriers Spearhead Pacific Task Force Drives

**See Front Cover**

➤ FROM ABOARD one of the warships in a task force in the Pacific, the U. S. Navy's photographer has caught the picture on the front cover of this SCIENCE NEWS LETTER showing other ships on the same combat mission, including two carriers of the new Essex class. These carriers, 25,000-ton vessels, have spearheaded drives on many Japanese-held islands in the Pacific—Wake, Rabaul, Makin, Tarawa, the Marshalls and Nauru.

Operating from the carriers are Douglass Dauntless dive-bombers and Grumman Avenger torpedo planes. Cover for the bombers is provided by the new and distinguished Grumman Hellcats.

*Science News Letter, January 8, 1944*

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# Books Off the Press

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FORMULAS FOR THIS AND THAT—Norman E. Dodson—*Newberry College,* 75 p., illus., 75c paper

A HISTORY OF THE WAR: In Maps, In Pictographs, In Words— Rudolf Modley—*Penguin Books,* 177 p., illus., 25c paper

ITALIAN OR AMERICAN; The Second Generation In Conflict—Irvin L. Child—*Yale Univ.,* 208 p., $2.75

THE JOHNS HOPKINS HOSPITAL AND THE JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE: A Chronicle: Volume 1 Early Years 1867-1893—Alan M. Chesney—*Johns Hopkins,* 318 p., illus., $3

LIFELINE: The Ships and Men of Our Merchant Marine at War—Robert Carse—*Morrow,* 189 p., illus., $2.75

MARINE PIPING HANDBOOK: For Designers-Fitters-Operators—Edward P. Goehring—*Cornell Maritime Press,* 662 p., illus., $5

SHRUBS OF MICHIGAN—Cecil Billington—*Cranbrook Inst. of Science,* 249 p., illus., $2.50. Bulletin No. 20.

THE WHITE BRIGADE—Robert Goffin, English Version by Charles Lam Markmann—*Doubleday, Doran,* 199 p., $2. An account of the Belgian underground.

GENERAL SCIENCE

# Mexico Most Advanced

➤ MEXICO was once the most scientifically advanced country in Latin America. Alexander von Humboldt, famous German naturalist, explorer and historian who visited there at the beginning of the nineteenth century, set Mexico at the head of all Latin American countries in cultural attainment at that time.

Humboldt's travels between 1799 and 1804 and study of sciences in Latin-American countries were described by Dr. C. A. Browne of the U. S. Department of Agriculture, speaking before a meeting of the History of Science Society in New York City.

From Mexico, the great traveler pointed out, came the invention of the process of amalgamation of metals, about 1551. Humboldt cited, also, the excellence of the Mexican School of Mines under the direction of Andres del Rio, discoverer of vanadium in 1801.

This historian of Latin America emphasized that the principal source of Mexico's riches was not her gold and silver mines, but her agriculture. Humboldt studied the historical origin, geographical distribution according to soil and climate, industrial use and economic importance of some 25 Mexican plant and animal products.

On his scientific journeys, Dr. Browne stated, Humboldt gathered material on the food habits, dress, language, folklore and primitive arts of the various Indian tribes in the Latin-American countries. He studied at first hand the manufacture by the Indians of the deadly poison, curare, as well as silver smelting, which reached its highest development among the Peruvians.

*Science News Letter, January 8, 1944*

PHYSIOLOGY

# Wing-Beats Aid Research

➤ TINY INSECTS, no bigger than gnats, are expected to signal with their buzzing wing-beats what effects various drugs and other physiological stimuli have on their bodily reactions. Ingenious apparatus for getting ultra-high-speed motion pictures of their wing movements is described by Dr. Carroll M. Williams of Harvard Medical School and Dr. Leigh E. Chadwick of the University of Rochester. (*Science,* Dec. 10)

The insect chosen for this work is the fruit fly, *Drosophila,* favorite experimental animal of geneticists. It was chosen because it can be had in numbers at any time of year, because long breeding has brought out pedigreed strains with uniform behavior patterns, and because despite its minute size it has certain anatomical features favorable for the experiments.

Since the wing-beats are far too fast for the human eye to distinguish, they are recorded on motion picture film by means of the Edgerton stroboscopic lamp, which flashes on and off hundreds of thousands of times in a second. Photographs of such high-speed objects as bullets, whirling wheels and vibrating springs taken with this apparatus have been familiar for several years.

Letting the insects fly free would of course take them out of range of the camera lens in an instant. They are therefore leashed by fastening them to very fine wires with a little paraffin—an exceedingly delicate operation that has to be performed under a low-power microscope with the little flies lightly etherized.

When set up for photographing each insect has a tiny platform under its feet. As long as its feet touch something solid, its wings remain stationary. But as soon as the platform is pulled down, even though it is still supported by the wire, the insect automatically sets its wings going. It does not seem to make any difference to the fruit fly that it isn't going anywhere; it continues its "in place" flight as long as the experimenter wants to take his high-speed pictures.

*Science News Letter, January 8, 1944*

METALLURGY

## Improved Chloride Iron Plating Solution Devised

➤ AN IMPROVED chloride iron plating solution will probably have wide application in industry, the Electrochemical Society was told in a report by William B. Stoddard, Jr., of the Champion Paper and Fiber Co., Hamilton, Ohio. The solution contains chlorides of iron and manganese, and a wetting agent, a sodium salt of lauryl sulfate.

The particular chlorides used in the new solution are ferrous chloride and manganese chloride; the sodium salt used is known as gardinol WA. The gardinol relieves pitting to a remarkable extent without interfering with the ductility of the iron deposit. The addition of the manganese serves to decrease the grain size, and to broaden the physical operating conditions.

*Science News Letter, January 8, 1944*

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# •New Machines and Gadgets•

⚙ *EATING a grapefruit may be made easier if it is prepared with a new knife just patented. The non-edible web separating the pulp segments can be cut out by two parallel cutting edges joined at their ends with a cutting loop, all of which is attached to a handle.*

*Science News Letter, January 8, 1944*

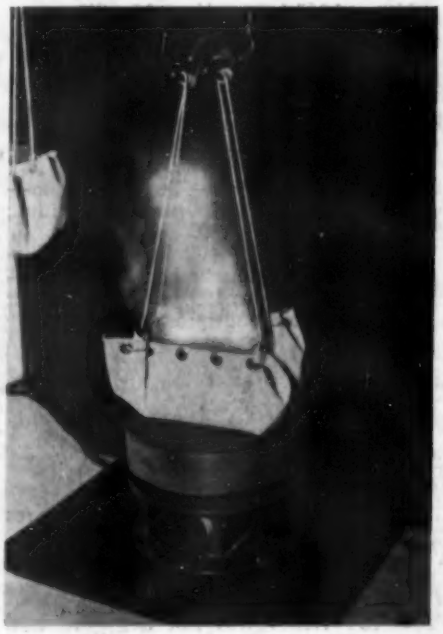
⚙ *TWO FAINT converging lines near the lower edge of a sheet of typewriting paper enable the writer to know when he is near the bottom of the sheet. The distance between the two lines at any particular point is designed always to equal the distance to the bottom of the sheet. The device has just received a patent.*

*Science News Letter, January 8, 1944*

⚙ *EAR MUFFS, which may be quickly suspended or detached from the sweatband of a hat, consist of wire frames covered with suitable cloth. Recently patented, each frame is a single piece of resilient wire with a spring clamp to hold it to the sweatband.*

*Science News Letter, January 8, 1944*

⚙ *LIGHTWEIGHT, collapsible containers, for boiling water and cooking soup or whatever the hungry soldier may have on hand, are being made of rubber and asbestos. These containers, which pack flat when not in use, were developed as part of the aviator's emergency kit. They can be suspended over an open fire by means of an asbestos string, which also holds them in shape.*



*Science News Letter, January 8, 1944*

⚙ *PAINT to weather-proof outside electric wiring may be applied to the already installed wire by a trough-shaped device with a flanged wheel. The wheel guides the device along the wire, a guide pin keeps the wire immersed in the paint held in the trough and stiff brushes force the paint into the braid. Attached to a pole, the device can be pushed along the wire from the ground.*

*Science News Letter, January 8, 1944*

⚙ *OIL-FREE fruit juices may be extracted by a newly patented device consisting of a drum which rotates over a V-shaped trough. The trough is right-angled where fruit cut in quarters is fed into it, but gradually flattens as it approaches nearer the drum. The drum carries the fruit along and furnishes the pressure to extract the juice.*

*Science News Letter, January 8, 1944*

*If you want more information on the new things described here, send a three-cent stamp to* SCIENCE NEWS LETTER, *1719 N St., N. W., Washington 6, D. C., and ask for Gadget Bulletin 189.*

# Question Box

**BACTERIOLOGY**

How much life is there in a teaspoonful of soil? p. 28.

**BOTANY**

What does cloudy weather do to cotton buds? p. 21.

**CHEMISTRY**

In what kind of paper bag can milk be carried home? p. 26.

**ENTOMOLOGY**

What sort of bombs will be used in greenhouses after the war? p. 24.

**GENERAL SCIENCE**

In what condition are the scientific institutions of Leningrad? p. 21.

**GENETICS**

How was camphor used to produce a new food? p. 21.

**MEDICINE**

How can the bone marrow of a cadaver possibly add to man's years? p. 19.

What new clue is there to the conquest of leukemia? p. 20.

With what other diseases is toxoplasmosis confused? p. 28.

**NUTRITION**

For what disease should raw brain be eaten? p. 24.

Why is a cereal-milk-bone combination added to dehydrated pork? p. 25.

**ORNITHOLOGY**

How can firecrackers help in taking a bird census? p. 22.

**PHYSIOLOGY**

Why are artificial "resuscitators" not approved by a Yale physiologist? p. 22.

**PSYCHOLOGY**

How do the American people feel about the post-war planning? p. 30.

**PUBLIC HEALTH**

How does Europe's typhus differ from the American variety? p. 23.

**SAFETY**

What is a major cause of absenteeism in winter weather? p. 29.

*Where published sources are used they are cited.*


# Books

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